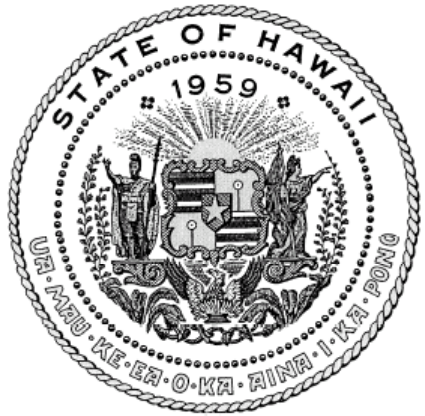

Topic 3: Baseline Simulation

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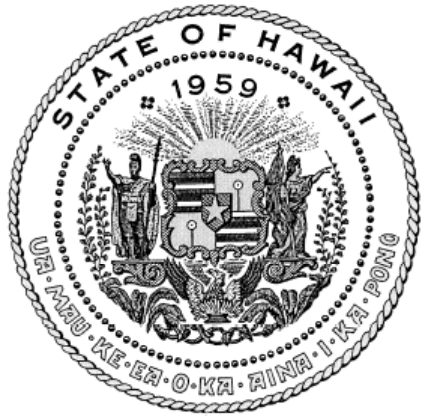
Discussion Points

- Simulation Model
  - Production Modules
  - Financial Modules
- Baseline Simulation
  - Objective
  - Inputs
  - Outputs

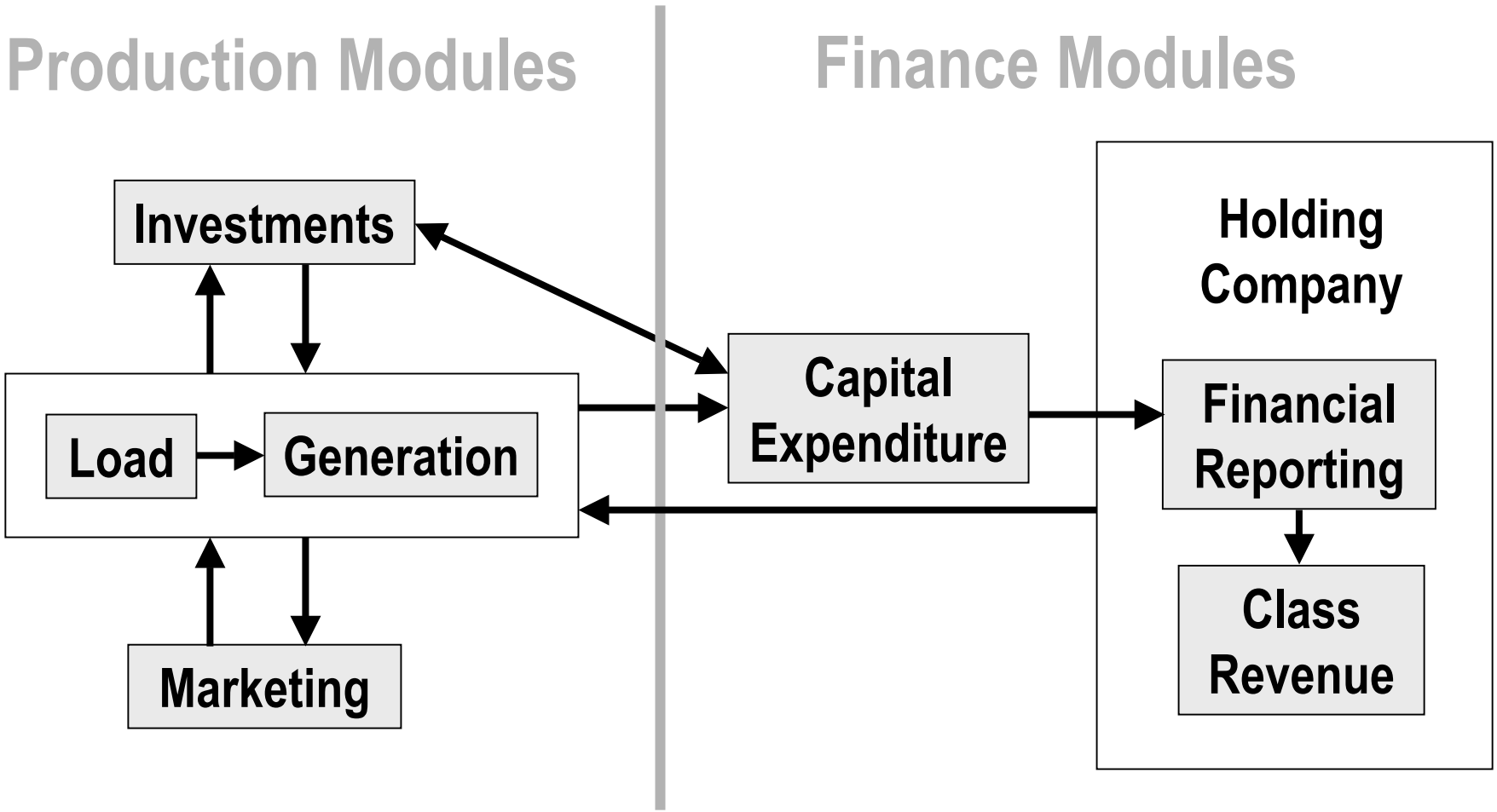


Simulation Model

Simulation Model Components

- **Production Modules (4)**
  - **Load**
  - **Generation**
  - **Investments**
  - **Network trade**
- **Finance Modules (4)**
  - **Capital expenditure**
  - **Financial reporting**
  - **Class revenue/tariffs**
  - **Holding company**

Model Schematic



Production Modules

- Load Forecast Adjustment ("LFA")
- Generation & Fuel ("GFA")
- PROVIEW for expansion planning
- Network Economy Interchange ("NEI")

Load Forecast Adjustment ("LFA")

- Represents & modifies load forecasts
- Links to production costs, system reliability, financing & revenue requirements, etc.
- Inputs: peak demand, load shapes, load factor, direct load control programs, etc.
- Outputs: energy sales, energy losses, energy requirements, etc.

Generation & Fuel ("GAF")

- Performs an optimal dispatch of generation resources
- Simulates the effects of changes in operating characteristics, fuel prices & supply, etc.
- Inputs: capacity, cost, heat rates, fuel contracts, generation contracts, etc.
- Outputs: energy required per technology, cost profiles, emissions

PROVIEW

- Determines long-range expansion plans balancing demand & supply
- Simulates the effects of additional generation & transmission resources or load modification
- Inputs: alternative technologies, unit capacity sizes, load modification programs, etc.
- Outputs: alternative least-cost expansion plans

Network Economy Interchange ("NEI")

- A component of GAF
- Minimizes total production cost & includes trades with other systems
- Inputs: transmission constraints & losses, generation capacity limits, wheeling charges
- Outputs: adjustment to the utility's hourly load profile

Finance Modules

- Capital Expenditure & Recovery (“CER”)
- Financial Reporting & Analysis (“FIR”)
- Class Revenue Module (“CRM”)
- Holding Company Module (“HCM”)

Capital Expenditure & Recovery ("CER")

- Compares generation alternatives & analyzes their financial implications
- Inputs: bond issues, construction-work-in-progress, depreciation, project life, etc.
- Outputs: an indication of the utility's capability for capital investment

Financial Reporting & Analysis ("FIR")

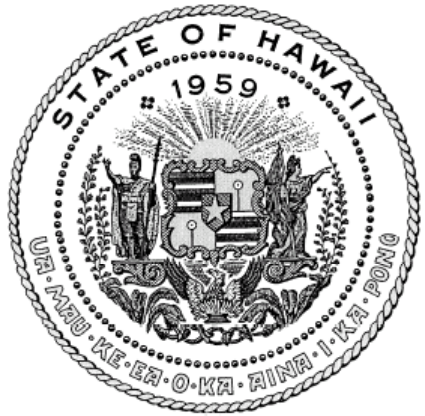
- Evaluates the financial & rate implications of alternative construction programs, fuel cost scenarios, regulatory action, & financial strategies
- Inputs: inflation, interest rates, regulatory policies, financial market conditions
- Outputs: financial statements & ratios, rate base, allowed rate increases

Class Revenue Module ("CRM")

- A component of FIR
- Allocates rate base & expense items to rate classes
- Allows the design of rate structures per class
- Inputs: financial statements & regulatory indicators
- Outputs: energy charge, customer charge, demand charge

Holding Company Module ("HCM")

- Consolidates the financial analysis across regulated & non-regulated subsidiaries
- Simulates the impact of acquisitions on financial operations
- Inputs: financial statements & regulatory indicators
- Outputs: consolidated financial performance



Baseline Simulation

Objective

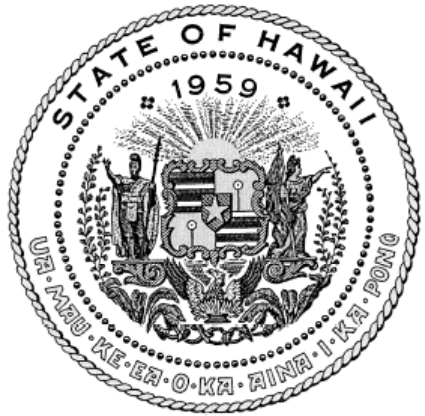
- Capture current conditions of power markets
- Simulation of island power markets
  - Hawaii
  - Oahu
  - Maui
  - Molokai
  - Lanai
  - Kauai
- Base year: 2003 or 2004

Inputs

- Existing collection of power plants & supply resources
- Existing consumption patterns
- Current tariff structures under cost-of-service regulation
- Existing opportunities for utilities to earn a reasonable rate of return

Outputs

- Replication of existing conditions in island power markets
- Sensible overall results
- Appropriate baseline scenario



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